

REMARKS

Claims 1, 2, 4, 6-8, 10-15, 17, 18, and 20 have been amended. Claims 1-4, 6-10, and 12-20 remain. Claim 11 was withdrawn. Claim 5 is canceled. However, claim 1, identified as generic in the Office Action of June 15, 2005, remains generic to claim 11. Since claim 1 is patentable for the reasons set forth below, claim 11 is likewise patentable. Reinstatement of claim 11 is requested pursuant to the terms of the election requirement of June 15, 2005.

Amendments to the Specification

The specification has been amended in response to the comments in the Office Action. The changes, including those to the abstract of the disclosure, respond to points raised in the Office Action.

Regarding the objection to paragraph [0006], the misspelling noted in the Office Action was corrected in the Amendment dated July 14, 2005.

Paragraph [0039] has been amended to correct a typographical error.

The objection to the specification as failing to provide antecedent basis for a recitation in claim 7 is mooted by the changes to the claim. See the discussion below of claim 7 in connection with the drawing objections.

Regarding the objection to the symbol O(1) used in the specification as filed, the applicants have amended the specification to substitute the meaning of the originally used symbol.

Other changes to the specification reflect the changes to the drawings discussed below.

Objections to the Drawings

The following discusses the claim features the Office Action alleged are not shown in the drawings.

1. Claim 4. The objection was that the drawings do not show the recited “second axial flow impeller having a plurality of impeller blades.” A new sheet of drawings with new Figure 8 showing this feature is enclosed with the accompanying Submission of Corrected Drawings. Likewise, paragraph [0050] of the specification has been amended to describe the features shown in Figure 8. The applicants respectfully submit that Figure 8 and the text added to paragraph [0050] are supported by the original specification, including the original claims, and thus do not introduce new matter into the application.

2. Claim 6. The first objection was that the drawings do not show a second plurality of lifting elements “arranged in a second cascade around said hub.” As the objection is understood, it is addressed by the changes to claim 6.

Other objections to claim 6 were based on the recitation therein of a second cascade with an airfoil configuration or a distance between adjacent lifting elements that “varies circumferentially around said second cascade.”

Both of these objections are addressed by the addition of FIGURES 10A and 10B, which depict the lifting element configuration described in the specification. Since that description was included in the specification and claims as originally filed, these drawing figures do not introduce new matter into the application.

3. Claim 7. The objection was that the drawings do not show “a second cascade [that] includes at least one of (i) a stator . . . and (ii) a second axial flow impeller” The applicants understand the objection to be that the drawings do not show an apparatus including a second cascade with both elements (i) and (ii). To address the objection, claim 7 has been amended to delete the words “at least.” Element (ii) is illustrated in new Figure 8.

4. Claims 8 and 9. The objection was that the drawings do not show “a propeller for generating thrust used to propel a body through [a] fluid.” This objection is respectfully traversed. The fan shown in Figure 2 generates thrust, and can be considered to be a propeller according to the claim recitation. Of course, the “propeller” recited in the claims is not limited to the rotor of a turbofan engine, but such a rotor does comprise a “propeller” as recited in claims 8 and 9.

5. Claim 10. The objection is that the drawings do not show a propeller with skewed blades. This objection is addressed by new Figure 11B, which depicts skewed impeller blades. Figure 11B depicts a conventional configuration of skewed blades, as shown in U.S. Patent 5,607,329, particularly Fig. 10, and as described in column 8, lines 61-62. Accordingly, Figure 11B does not introduce new matter into the present application.

6. Claim 11. In anticipation of the reinstatement of claim 11, the applicants have included new Figure 11A, which depicts a ducted marine propulsor, the configuration of which is known to those skilled in this art as shown in U.S. Patents No. 5,078,828, No. 5,252,875, No. 5,289,068, and No. 5,607,329. Copies of those patents are enclosed and they are listed on the enclosed Form PTO-1449. The Examiner is requested to initial a copy of the Form PTO-1449 to indicate that he has considered these patents, and return the initialed copy to the applicants.

6. Claim 12. The first objection was that the drawings do not show an axial flow impeller as a compressor of a gas turbine engine. A new sheet of drawings with new Figure 9 showing this feature is enclosed with the accompanying Submission of Corrected Drawings. Likewise, paragraph [0051] of the specification has been amended to describe the features shown

in Figure 9. The applicants respectfully submit that Figure 9, which is based closely on Figure 2, and the text added to paragraph [0051] are supported by the original specification, including the original drawings and claims, and thus do not introduce new matter into the application.

The second objection was that the drawings do not show an axial flow impeller as a turbine of a gas turbine engine. This feature has been deleted from claim 12.

7. Claim 13. The objection was that the drawings do not show a device having plural stages. New Figure 9 shows this feature, and it is described in connection therewith in amended paragraph [0051] of the specification.

8. Claim 14. The objection was that the drawings do not show a second plurality of lifting elements arranged in a cascade around a hub. As the objection is understood, it is addressed by the changes to claim 14.

Formal Claim Amendments

The suggestions regarding claim language at page 5 of the Office Action have been adopted.

Response to Claim Rejections

1. Indefiniteness. Various claims were rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter regarded as the invention.

The changes to the claims address all of the grounds for rejection mentioned. The objection to the use of the symbol O(1) in claims 17 and 20 has been addressed by amending the claims to substitute the meaning of the originally used symbol, in accordance with the corresponding changes in the specification.

2. Prior Art. Independent claims 1 and 15 were rejected under 35 U.S.C. § 102 as being anticipated by any one of three references. The references applied in these rejections were (a) U.K. Patent 2,032,048, (b) Dickinson et al., “Wing Rotation and the Aerodynamic Basis of Flight,” Science, Vol. 284, June 18, 1999, pp. 1954-60.12, and (c) Bandyopadhyay et al., “A Biometric Propulsor for Active Noise Control: Experiments,” NUWC-NPT Tech. Rept. 11,351, NAVSEA Naval Undersea Warfare Center (NUWC) Division, Newport, RI, March 2002, pp. 1-15.

As understood, the Examiner read apparatus claim 1 as reciting that either the “lifting elements,” or the “device” for directing flow into the inlet of the lifting element cascade, alone can vary a parameter of the flow relative to each lifting element. Accordingly, claim 1 has been amended to make it clearer that the “device” functions to vary a flow parameter in the manner recited in the claim, even though the lifting elements may do so, as well. The Examiner has not contended that any of the references disclose such a device, and the applicants do not read any of them to do so either.

Likewise, claim 15 has been amended to make it clearer that the recited method involves varying a parameter of the flow directed into the inlet of the lifting element cascade. As noted in connection with claim 1, the Examiner has not contended that the references operate in this way, nor do the applicants read them to do so.

Dependent claims 6 and 13 were rejected by combining U.S. Patent 3,169,747 to Seymour with the UK '048 used to reject claim 1. However, the Office Action does not contend that Seymour discloses or suggests claim 1’s “device.” Accordingly, since neither the references used to reject claim 1 nor Seymour would have suggested that feature of claim 1, the applicants

submit that claims 6 and 13 likewise avoid the rejection based on a combination of Seymour and the references used to reject claim 1.

Double Patenting. Claims 1, 2, 6, 13, and 14 were rejected as being obvious from claim 9 of co-pending application No. 10/702,272 either alone or in view of Seymour. Claims 15 and 16 were rejected for obviousness-type double patenting in view of claims 12 and 13 of co-pending application No. 10/702,272, in combination with the UK '048.

The applicants do not concede that these rejections are proper on the merits. However, an appropriate response will be made when the present application has been found otherwise allowable. At that time, if this is the only rejection in the application, and application No. 10/702,272 has not yet issued, the Examiner is expected to withdraw the rejection and permit the present application to issue, pursuant to M.P.E.P. § 804, para. I.B.

Requirement for Information

The Examiner has requested further information regarding the disclosure to the Department of the Navy of subject matter relating to the present invention, mentioned in the Information Disclosure Statement of November 5, 2003. This information is submitted in a separate envelope filed under seal pursuant to M.P.E.P. § 724.02.

Summary

The applicants believe that this Amendment and the accompanying Submission of Corrected Drawings and Response to Requirement for Information respond to all of the points raised in the Office Action, and that claims 1-4 and 6-20 are patentable.

Any fees associated with this Amendment should be charged to Deposit Account No. 50-0409.

The applicants' undersigned attorney may be reached by telephone at (609) 921-8660.

All correspondence should continue to be directed to the below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David M. Quinlan", written over a horizontal line.

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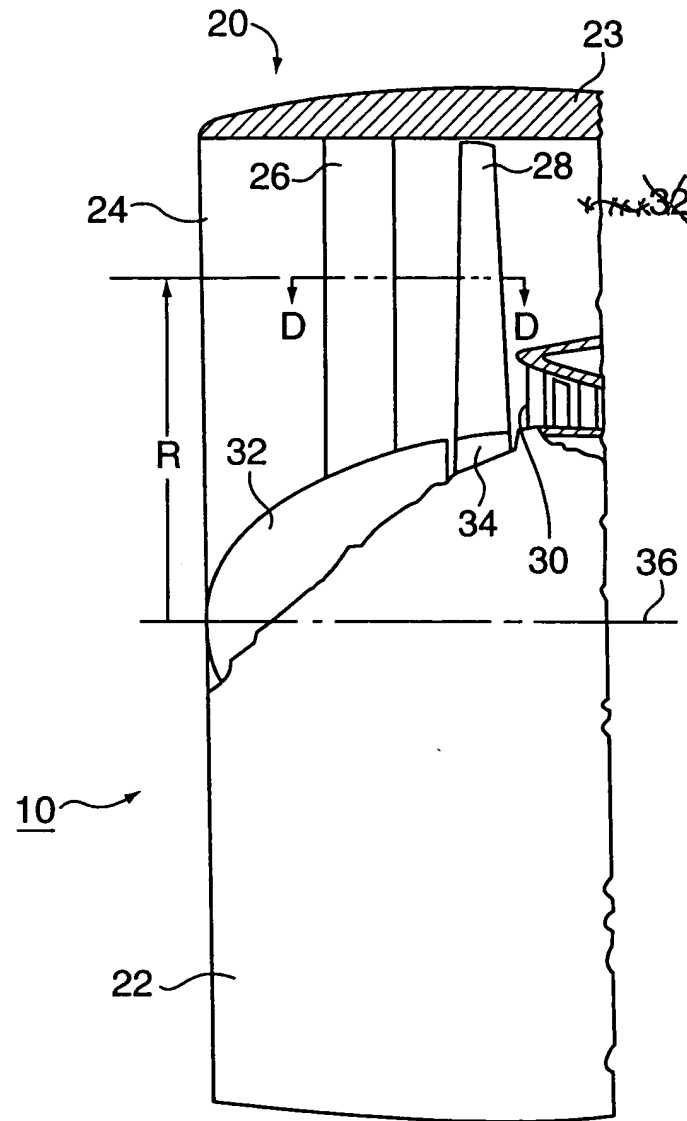


FIGURE 2